

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

WRITTEN OPINION

(PCT Rule 66)



To:

OKABE MASAO

**NO.602, FUJI BLDG. 2-3,
MARUNOUCHI 3-CHOME
CHIYODA-KU TOKYO 100-0005
JAPAN**

Date of mailing
(day/month/year)

03.8.2004

Applicant's or agent's file reference

CF017636WO

REPLY DUE

within **2 months** from
the above date of mailing

International application No.

PCT/JP 03/13074

International filing date (day/month/year)

10.10.03

Priority date (day/month/year)

16.10.02

International Patent Classification (IPC) or both national classification and IPC
Int.Cl.⁷

H01L 31/04, C30B 29/06, C01B 33/02

Applicant

CANON KABUSHIKI KAISHA

1. This written opinion is the 1 (first, etc.) drawn by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is:

16.02.05

Name and mailing address of the IPEA/JP

Japan Patent Office

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

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WRITTEN OPINION

International application No.

PCT/JP 03/13074

I. Basis of the opinion

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 Nos. _____, as originally filed
 Nos. _____, as amended (together with any statement) under Article 19
 Nos. _____, filed with the demand
 Nos. _____, filed with the letter of _____
- ☐ the drawings:
 sheets/fig _____, as originally filed
 sheets/fig _____, filed with the demand
 sheets/fig _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINION

International application No.
PCT/JP 03/13074

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|------------|-----|
| Novelty (N) | Claims | | YES |
| | Claims | <u>1-2</u> | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | <u>1-2</u> | NO |
| Industrial applicability (IA) | Claims | <u>1-2</u> | YES |
| | Claims | | NO |

2. Citations and explanations

D1: JP 10-98205 A (CANON KABUSHIKI KAISHA)

D2: Kishore et al, "Thin film solar cells from directionally solidified polycrystalline silicon doped with B, Al, Cu and C", Conference Record of the 19th IEEE Photovoltaic Specialists Conference, 1987, pages 1271 - 1274

Claim 1-2

1. As shown in D1, plate-shaped metal-grade silicon manufactured by melting metal-grade silicon necessarily has a certain amount of impurities such as B or Al (see Table 3, for example).

Also taking into account of the ambiguities as explained in VIII, claims 1-2 are not distinguishable from D1.

2. Furthermore, D2 discloses a method of manufacturing polycrystalline silicon ingots using electronic grade silicon by directional solidification process, in which a certain amount of Al or B is added (see p. 1271, right column).

Consequently, claims 1-2 are not distinguishable also from D2.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Claims 1-2 are directed to a polycrystalline silicon substrate itself, not to a method of its manufacturing.

However, while these claims are defined by the amount of B (or Al) added to molten metallurgical grade silicon, it is considered that the amount of impurities contained in the polycrystalline silicon substrate can not to be determined simply by said amount in the molten silicon.

Accordingly, these claims are not clear in their scope.

2. Also, claims 1-2 are not clear, because, in the polycrystalline silicon substrate as a final product, the B (or Al) added to the molten silicon is considered to be indistinguishable from that contained as a background impurity in the metallurgical grade silicon.